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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER	
LEE, CHUN KUAN	

ART UNIT	PAPER NUMBER
2181	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/676,430	ADL-TABATABAI ET AL.	
	Examiner	Art Unit	
	Chun-Kuan Lee	2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-9,11-15,18,19 and 21-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-9,11-15,18,19 and 21-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/06/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

RESPONSE TO ARGUMENTS

1. Applicant's arguments with respect to claims 1-3, 5-9, 11-14 and 23-27 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments with respect to claims 15, 18-19, 21-22 and 28 have been fully considered but they are not persuasive. Rejection of claim 6 under 35 U.S.C. 112 second paragraph is withdrawn. Currently, claims 4, 10, 16-17, 20 and 29 are canceled and claims 1-3, 5-9, 11-15, 18-19 and 21-28 are pending for examination.

2. In response to applicant's arguments (on page 8, 2nd paragraph to page 9, 3rd paragraph) regarding the amended independent claims 1, 7, 23 and 26 rejected under 35 U.S.C. 103(a) that the combination of Tremaine, Dye and Goldberg do not teach/suggest the newly amended claimed feature of dictionary elements in a compression block being automatically derived from a number of leading bits in a string of data; applicant's arguments have fully been considered, but are not found to be persuasive.

The examiner respectfully disagrees, because Dye does teach/suggest the implementation of dictionary based compression, wherein such implementation is well known to be implemented based on a history table, and the history table maintains preceding transferred data stream (Dye, col. 24, ll. 2-65), therefore suggesting that the dictionary elements is automatically derived from the number of leading bits in a string

of data, as the data is transferred and maintained in the history table to be utilized as dictionary elements.

3. In response to applicant's arguments (on page 11) regarding the rejection of independent claims 15 and 19 rejected under 35 U.S.C. 103(a) that the combination of Dye and Goldberg do not teach/suggest the claimed feature of receiving a fixed offset compressed data block; applicant's arguments have fully been considered, but are not found to be persuasive.

The examiner respectfully disagrees, because Dye does teach/suggest receiving a fixed offset compressed data block (col. 7, ll. 20-30 and col. 33, ll. 56-62), as the dictionary based fixed compression ration enable the transferring and receiving of compressed data block having fixed offset.

I. ACKNOWLEDGEMENT OF REFERENCES CITED BY APPLICANT

4. As required by **M.P.E.P. 609(C)**, the applicant's submissions of the Information Disclosure Statement dated February 06, 2008 is acknowledged by the examiner and the cited references have been considered in the examination of the claims now pending. As required by **M.P.E.P 609 C(2)**, a copy of the PTOL-1449 initialed and dated by the examiner is attached to the instant office action.

II. REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 7, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tremaine (US Patent 6,775,751) in view of Dye et al. (US Patent 6,879,266) and Goldberg (US Patent 7,035,656).

6. As per claims 1, 7, 23 and 26, Tremaine teaches a computer system and method comprising:

a central processing unit (CPU) (Fig. 1, ref. 101);

a cache memory coupled to the CPU having a plurality of compressible cache lines to store additional data (col. 1, ll. 22-43);

receiving a string of data symbols (col. 1, ll. 22-43 and col. 5, ll. 1-11);

a register (Fig. 1, ref. 113) to store a plurality of fixed length data symbols to be compressed (col. 5, ll. 1-11);

a chipset having a cache controller (Fig. 1, ref. 102), coupled to the CPU (Fig. 1, ref. 101) and the cache memory (col. 1, ll. 22-43), including:

compression logic (Fig. 1, ref. 104) to compress each of the plurality of cache lines (data symbols) by compressing the data within a compressed cache line into a compressed data block (compressed data block) having a plurality of compressed

symbols (Fig. 2, ref. 204) and translation information (Fig. 2, ref. 207) (col. 5, l. 35 to col. 6, l. 41);

the compressed symbols (Fig. 2, ref. 204) and translation information (Fig. 2, ref. 207) having a length and offset within the compressed data block (compressed data block) (col. 5, l. 35 to col. 6, l. 41 and col. 8, ll. 21-31); and

a main memory (Fig. 1, ref. 103) coupled to the chipset (Fig. 1, ref. 102).

Tremaine does not expressly teach the computer system and method comprising transferring a plurality of dictionary elements; a dictionary register; compressing the data into a fixed sized compressed data block having fix length and fix offset; and wherein the number of dictionary elements is automatically derived from a number of leading bits in the string of data.

Dye teaches a system and a method comprising:

a dictionary register (col. 24, ll. 2-54), for implementing the dictionary based compression/decompression;

compressing the data into a fixed sized compressed data block having fix length and fix offset (col. 7, ll. 20-30 and col. 33, ll. 56-62); and

a number of dictionary element is automatically derived from a number of leading bits in a string of data (col. 24, ll. 2-65), as the dictionary element is automatically derived by maintaining a history table of preceding transferred data stream.

It would have been obvious for one of ordinary skill in this art, at the time of invention was made to include Dye's parallel compression/decompression's fix

compressed data size and derivation of dictionary elements into Tremaine's computer system and method for the benefit of removing system bottlenecks and increase performance for data compression/decompression (Dye, Abstract) to obtain the invention as specified in claims 1, 7, 23 and 26.

Tremaine and Dye do not expressly teach the transferring the plurality of dictionary elements.

Goldberg teaches a data compression system and method comprising transferring dictionary elements (col. 1, ll. 17-40).

It would have been obvious for one of ordinary skill in this art, at the time of invention was made to include Goldberg's dictionary element into Tremaine and Dye's compression system and method for the benefit of optimizing the amount of data being transferred by reducing the actual amount of data transferred and enabling more resource for error detection and data correction (Goldberg, col. 1, ll. 23-26) to obtain the invention as specified in claims 1, 7, 23 and 26.

7. Claims 2-3, 5-6, 8-9, 11-12, 24-25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tremaine (US Patent 6,775,751) in view of Dye et al. (US Patent 6,879,266) and Goldberg (US Patent 7,035,656) as applied to claims 1, 7, 23 and 26 above, and further in view of Castelli et al. (US Patent 6,847,315).

8. As per claims 2 and 8, Tremaine, Dye and Goldberg teach all the limitations of claims 1 and 7 as discussed above, where Tremaine further teaches the compression system and method comprising a first symbol would be compared with the dictionary element (Tremaine, col. 5, ll. 35-49).

Tremaine, Dye and Goldberg do not teach the compression system and method comprising dividing a first symbol into a first component and a second component; and comparing the first component with the dictionary elements.

Castelli teaches a data compression system and method comprising a data compressor separating a uncompressed data into a first portion and a second portion, wherein one of the portion is left uncompressed and the other portion is compressed (col. 1, ll. 60-65 and col. 2, ll. 10-18).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Castelli's separation of the uncompressed data into Tremaine, Dye and Goldberg's the compression system and method for the benefit of reducing latency associated with the transferring of compressed data as data is compressed at the transmitter, transmitted in compressed form and decompressed at the receiver (Castelli, col. 1, ll. 57-59). The resulting combination of the references further teaches the compression system and method comprising dividing the uncompressed data (e.g. first symbol) into the first portion (e.g. first component) and the second portion (e.g. second component); and comparing the first component With the dictionary elements.

9. As per claim 3, Tremaine, Dye, Goldberg and Castelli teach all the limitations of claim 2 as discussed above, where Tremaine and Castelli further teach the compression system and method further comprising compressing the first component to form a first tag if the first component matches a dictionary element (Tremaine, col. 5, ll. 35-49 and Castelli, Fig. 7 and col. 2, ll. 10-18), such that if the uncompressed data (i.e. first component) matches the dictionary element, the uncompressed data would obviously be encoded into the compressed state (i.e. first tag).

10. As per claim 5, Tremaine, Dye, Goldberg and Castelli teach all the limitations of claim 3 as discussed above, where Goldberg and Castelli further teach the compression system and method further comprising storing the first component at a dictionary element if the first component does not match a dictionary element (Goldberg, col. 1, ll. 31-35 and Castelli, Fig. 7), as the dictionary must also be transmitted along with the compressed data for proper decompressing.

11. As per claim 6, Tremaine, Dye, Goldberg and Castelli teach all the limitations of claim 3 as discussed above, where Tremaine and Castelli further teach the compression system and method comprising wherein compressing the data comprises dividing a second symbol into a first component and a second component; and comparing the second component with the dictionary elements (Tremaine, col. 1, ll. 22-43 and col. 5, ll. 1-11 and Castelli, col. 1, ll. 60-65 and col. 2, ll. 10-18), as after

compressing the first symbol, the subsequent second symbol is compressed in the similar method.

12. As per claim 9, Tremaine, Dye, Goldberg and Castelli teach all the limitations of claim 8 as discussed above, where Dye further teaches the compression system and method comprising wherein the first and second components are compressed into fixed length compressed symbol (Dye, col. 33, ll. 56-62).

13. As per claim 11, Tremaine, Dye, Goldberg and Castelli teach all the limitations of claim 8 as discussed above, where Tremaine, Dye and Castelli further teach the compression system and method comprising wherein the first component is received at the compression logic and encoded to form a tag (Tremaine, col. 5, ll. 1-11; col. 5, ll. 35-49 and col. 6, ll. 6-41, Dye, col. 35, ll. 61-64 and Castelli, Fig. 7), as the first component would obviously be compressed to form the compressed data.

14. As per claim 12, Tremaine, Dye, Goldberg and Castelli teach all the limitations of claim 11 as discussed above, where Castelli further teaches the compression system and method comprising a buffer to store the tag and second component of each symbol as the compressed symbol (Castelli, Fig. 7), as the compressed symbol is buffered in the memory.

15. As per claims 24 and 27, Tremaine, Dye, Goldberg and Castelli teach all the limitations of claims 23 and 26 as discussed above, where Tremaine further teach the compression system and method comprising wherein the chipset (cache controller) further comprises decompression logic (Tremaine, Fig. 1, ref. 105) to decompress compressed symbols within a compressed data block to generate uncompressed symbols.

16. As per claim 25, Tremaine, Dye, Goldberg and Castelli teach all the limitations of claim 24 as discussed above, where Dye further teach the compression system and method comprising wherein the decompression logic decompresses the compressed symbols in parallel (Dye, col. 7, ll. 20-30).

17. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being Unpatentable over Tremaine (US Patent 6,775,751) in view of Dye et al. (US Patent 6,879,266) and Goldberg (US Patent 7,035,656), and further in view of Castelli et al. (US Patent 6,847,315) as applied to claims 8 and 24 above, and further in view of Franaszek et al. (US Patent 5,729,228).

18. As per claim 13, Tremaine, Dye, Goldberg and Castelli teach all the limitations of claim 8 as discussed above, where Tremaine further teaches the compression system and method comprising wherein the compression logic comprises obviously a no

matching logic to determine of the first component has all ones or all zeros (e.g. "all zero" special case) (Tremaine, col. 8, ll. 29-58).

Tremaine, Dye, Goldberg and Castelli do not expressly teach the compression system and method comprising dictionary matching logic to determine if the first component matches a dictionary element.

Franaszek teaches a compression system and method comprising a compressor (Fig. 2, ref. 241-244) compressing a corresponding uncompressed sub-block (Fig. 2, ref. 221-224) by matching the corresponding uncompressed sub-block to the dictionary (Fig. 2 and col. 2, l. 48 to col. 3, l. 15).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Franaszek's parallel decompressors into Tremaine, Dye, Goldberg and Castelli's compression system and method for the benefit of providing even faster data compression and decompression (Franaszek, col. 1, ll. 36-37). The resulting combination of the references further teaches the compression system and method comprising the compressor (e.g. dictionary matching logic) to compress the uncompressed data (e.g. first component) by matching the first component with the dictionary element.

19. As per claim 14, Tremaine, Dye, Goldberg, Castelli and Franaszek teach all the limitations of claim 13 as discussed above, where Tremaine and Franaszek further teach the compression system and method comprising wherein the compression logic

comprises an encoder coupled to the match logic and the no match logic to encode the first component to form a tag if the first component matches a dictionary element, has all ones or zeroes (Tremaine, col. 8, ll. 29-58 and Franaszek, Fig. 2, ref. 241-244).

20. Claims 15, 19-21 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dye et al. (US Patent 6,879,266) in view of Goldberg (US Patent 7,035,656).

21. As per claims 15, 19 and 28, Dye teaches a decompression system and method comprising:

receiving a fixed offset compressed data block having compressed symbols (col. 7, ll. 20-30 and col. 33, ll. 56-62); and

decompressing each of the compressed symbols in parallel (col. 7, ll. 20-30), by:

analyzing encoded tag bits within a compressed symbol (col. 35, ll. 61-64); and

decompressing the compressed symbol to form a symbol based upon a type of compression indicated by the encoded tag bits, wherein each of the compressed symbols are decompressed simultaneously (col. 7, ll. 20-30 and col. 35, ll. 61-64).

a plurality of decompression units to decompress a corresponding compressed symbol within a compressed data block having a plurality of compressed symbols having a fixed length and fixed offset to generate an uncompressed symbol by analyzing encoded tag bits within a compressed symbol and decompressing the compressed symbol to form a symbol based upon a type of compression indicated by

the encoded tag bits, wherein the decompression units decompress the compressed symbols in parallel (col. 7, ll. 20-30 and col. 35, ll. 61-64), wherein the plurality of decompression unites are needed for implementing the parallel decompression;

receiving a fixed offset compressed data block having a plurality compressed symbols (col. 7, ll. 20-30 and col. 33, ll. 56-62); and

decompressing a randomly accessed and a first compressed symbol within the compressed data block (col. 7, ll. 20-30 and col. 33, ll. 56-62), wherein the randomly access is enabled by the parallelism; by:

analyzing encoded tag bit within a compressed symbol (col. 7, ll. 20-30 and col. 35, ll. 61-64); and

decompressing the compressed symbol to form a symbol based upon a type of compression indicated by the encoded tag bits (col. 7, ll. 20-30 and col. 35, ll. 61-64).

Dye does not teach the decompression system and method comprising receiving a plurality of dictionary elements

Goldberg teaches a data decompression system and method comprising receiving a compressed data having a dictionary element along with the compressed data (col. 1, ll. 17-40).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Goldberg's dictionary element into Dye 's decompression system and method for the benefit of optimizing the amount of data transferred by reducing the actual amount of data transferred and enabling more resources for error detection and data correction (Goldberg, col. 1, ll. 23-26). The resulting combination of

the references further teaches the decompression system and method comprising wherein the received compressed data (e.g. fixed offset compressed data block) having the plurality of dictionary elements.

22. As per claim 21, Dye and Goldberg teaches all the limitations of claim 19 as discussed above, where Dye further teaches the system comprising wherein each decompression unit comprises logic to decode the encoded tag bits component of a compressed symbol to generate a matched symbol component (Dye, col. 7, ll. 20-30 and col. 35, ll. 61-64).

23. Claims 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dye et al. (US Patent 6,879,266) in view of Goldberg (US Patent 7,035,656) as applied to claims 15 and 19 above, and further in view of Castelli et al. (US Patent 6,847,315).

Dye and Goldberg teach all the limitations of claims 15 and 21 as discussed above, where Dye further teaches the system and method comprising decoding the tag to form a matched component of the symbol (Dye, col. 7, ll. 20-30; col. 24, ll. 2-54 and col. 35, ll. 61-64); and combining the matched component to form the symbol (Dye, col. 7, ll. 20-30; col. 24, ll. 2-54 and col. 35, ll. 61-64).

Dye and Goldberg do not teach the decompression system and method comprising combining the matched component with an unmatched component within the compressed symbol.

Castelli teaches a data compression and decompression system and method comprising a data compressor separating a uncompressed data into a first portion and a second portion, wherein one of the portion is left uncompressed and the other portion is compressed forming a compressed data entry (Fig. 7; col. 1, ll. 60-65 and col. 2, ll. 10-18), therefore it would be necessary, during the decompression of data, to combined the uncompressed potion with the decompressed compressed portion to form the original uncompressed data.

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Castelli's compressed and compressed data into Dye and Goldberg's the decompression system and method for the benefit of reducing latency associated with the transferring of compressed data as data is compressed at the transmitter, transmitted in compressed form and decompressed at the receiver (Castelli, col. 1, ll. 57-59). The resulting combination of the references further teaches the decompression system and method comprising combining the uncompressed data (e.g. unmatched component) within the compressed symbol with the decompressed compressed data (e.g. matched component) to form the original uncompressed data (e.g. symbol).

III. CLOSING COMMENTS

Conclusion

a. STATUS OF CLAIMS IN THE APPLICATION

The following is a summary of the treatment and status of all claims in the application as recommended by **M.P.E.P. 707.07(i)**:

a(1) CLAIMS REJECTED IN THE APPLICATION

THIS ACTION IS MADE FINAL, as claims 1-3, 5-9, 11-15, 18-19 and 21-28 have received a final action on the merits. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

b. DIRECTION OF FUTURE CORRESPONDENCES

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671. The examiner can normally be reached on 8AM to 5PM.

IMPORTANT NOTE

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on (571) 272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C.K.L.

April 11, 2008

Chun-Kuan (Mike) Lee
Examiner
Art Unit 2181

/Alford W. Kindred/

Supervisory Patent Examiner, Art Unit 2163